

# Knowledgeplus Training Centre

## Mathematics

### Grade 7

#### Examples

#### **Chapter 1 – Numbers, Factors and Multiples**

##### Types of numbers

There are different types of numbers such as even, odd, prime, composite, square and triangular numbers.

##### Even numbers

Even Numbers are all numbers which are exactly divisible by 2. They end with 0,2,4,6 or 8.

Examples of even numbers: 8, 12, 24, 36, 50.

##### Odd Numbers

Odd numbers are numbers which leave a remainder of 1 when divided by 2. They end with 1, 3, 5, 7 or 9.

##### Prime Numbers

A prime number is a number that has only two distinct factors: 1 and itself.

Examples of prime numbers: 7, 13, 29, 37.

Composite a composite number is a number that has more than two factors.

Examples of composite numbers: 4, 6, 32, 100, 450.

4 has three factors, namely 1, 2 and 4.

6 has four factors, namely 1, 2, 3 and 6.

## Prime Factorisation

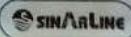
Primes Factors: Primes factorisation

Example  
Express 24 as a product of its prime factors

method 1 Tree factor Tree.

$$\begin{array}{c} 24 \\ \swarrow \quad \searrow \\ 4 \quad \times \quad 6 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ 2 \times 2 \quad 2 \times 3 \end{array}$$

$\therefore 24 = 2 \times 2 \times 2 \times 3 \rightarrow$  Expanded form  
 $= 2^3 \times 3.$   $\rightarrow$  Index form.



Form 1

method 2 : Division Method

$$\begin{array}{r} 2 \overline{) 24} \\ 2 \overline{) 12} \\ 2 \overline{) 6} \\ 3 \overline{) 3} \\ 1 \end{array}$$

$\therefore 24 = 2 \times 2 \times 2 \times 3$  - Expanded form  
 $= 2^3 \times 3$  - index form.

## Highest Common Factor (H.C.F)

Highest Common Factor (H.C.F)

Find the H.C.F. of 18 and 24

Solution

$$\begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$18 = 2 \times 3 \times 3$   
 $24 = 2 \times 2 \times 2 \times 3$

$\therefore$  H.C.F. of 18 and 24 =  $2 \times 3$

Form 1

Find the H.C.F. of 45, 60 and 90.

Solution

$$\begin{array}{r|l} 3 & 45 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 60 \\ \hline 2 & 30 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 90 \\ \hline 3 & 45 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$45 = 3^2 \times 5$   
 $60 = 2^2 \times 3 \times 5$   
 $90 = 2 \times 3 \times 5$

$\therefore$  H.C.F. of 45, 60 and 90 =  $3 \times 5 = 15$

## Least Common Multiple (L.C.M)

Form 1

Least Common Multiple

Example  
Find the L.C.M of 24 and 60

Solution

$\begin{array}{r} 2 \overline{)24} \\ 2 \overline{)12} \\ 2 \overline{)6} \\ 3 \overline{)3} \\ 1 \end{array}$	$\begin{array}{r} 2 \overline{)60} \\ 2 \overline{)30} \\ 3 \overline{)15} \\ 5 \overline{)5} \\ 1 \end{array}$
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In Expanded form  
 $24 = 2 \times 2 \times 2 \times 3$   
 $60 = 2 \times 2 \times 3 \times 5$

$\therefore$  L.C.M. of 24 and 60 =  $2 \times 2 \times 2 \times 3 \times 5$

In Index form  
L.C.M. of 24 and 60 =  $2^3 \times 3 \times 5$